

Macroeconomic Analysis of Differences in Health Care Expenditure

Bengt Jönsson

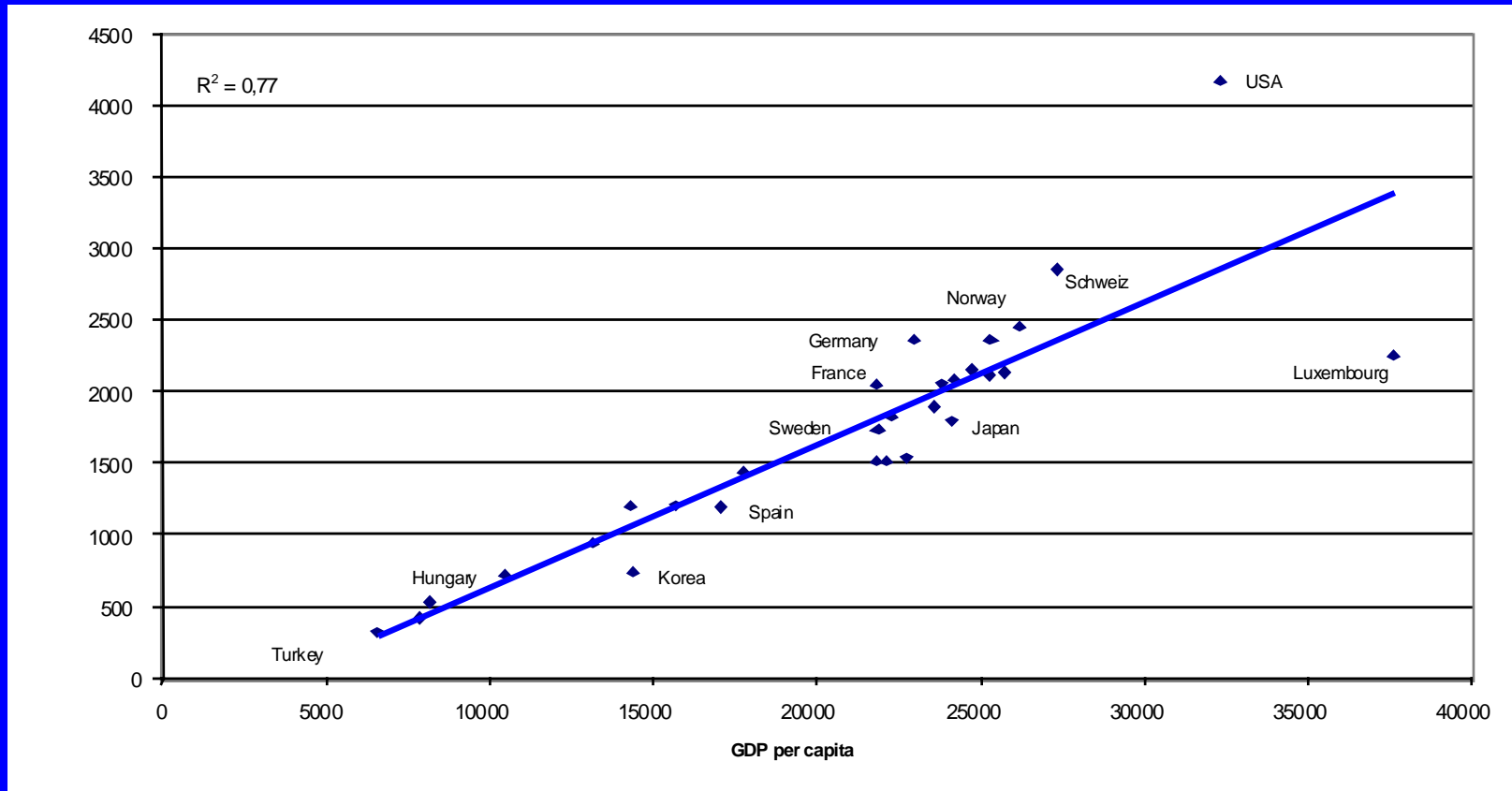
Stockholm School of Economics

Sweden

The Beginning: Newhouse (1977)

- Correlation between health care expenditure and GDP per capita
- 13 OECD countries in 1971
- Income explains 92% of the variation
- Other variables insignificant
 - Out-of-pocket payments
 - Reimbursement of doctors or hospitals

Health Expenditure and GDP per Capita in 1998. PPP USD



A controversial interpretation

- Health care is a “luxury” good
 - Income elasticity over unity
- Inconsistent with micro data
 - Lower share of individual expenditure for health care at higher incomes
- Questions asked
 - What is higher expenditures buying?
 - Quality of care rather than cure?

20 years of econometric studies

- Cross-section studies
 - Bivariate regressions
 - Conversion factor instability?
 - Multivariate regressions
 - Impact of financing and organisation
- Panel data studies
 - Fixed and/or random effect models
 - Effects of institutional variables, OECD 1970-91
 - Unit root and cointegration analysis

Main results

- Conversion factor instability
 - Results hold for health care expenditure deflated with health care specific PPPs
 - Relative price has a strong rationing effect on quantity
- Multiple regression analysis
 - GDP the most significant determinant with a positive income elasticity above unity

Public choice hypothesis

- Higher public/private ratio in finance and provision increase expenditure
 - Confirmed in Leus study
 - Rejected in a later study
- Open-ended financing arrangements
 - Fee for service increase costs
 - Logarithmic transformation the preferred functional form

Panel data analysis

- Demand variables
 - Income highly significant; at or above unity
 - Effect of population age structure insignificant
- Institutional variables that reduce expenditure
 - “Gatekeepers” -18%
 - Reimbursement model -9%
 - Capitation -17-21 %
 - Public provision (?)
- Institutional variables that increase expenditures
 - High share for in-patient care (?)
 - Budget ceilings (?)

A replicate and update to 1998

Table II. Regression results. Dependent variable: Health expenditure per capita.

Variable	General model		Reduced model	
	Coefficient	t-value	Coefficient	t-value
<i>Constant</i>	- 3.643 ^a	- 3.388	- 3.750 ^a	- 4.074
<i>GDP</i>	1.217 ^a	13.631	1.222 ^a	15.069
<i>PHE</i>	- 0.463 ^b	- 2.471	- 0.448 ^b	- 2.596
<i>Age65</i>	0.341 ^b	2.698	0.356 ^a	3.051
<i>Beds</i>	2.742E-02	0.405		
<i>Gatekeeper</i>	- 1.209E-02	- 0.189		
<i>df</i>	23		25	
<i>R² (R² adj)</i>	0.947 (0.936)		0.947 (0.940)	

^{a, b, c} represent 1%, 5% and 10% levels of significance, respectively.

Results from 1998

- Income elasticity above unity: 1.2
- Higher share for public financing reduce expenditure
- Share of population over 65 increase expenditure
- “Gatekeeper” and number of hospital beds insignificant

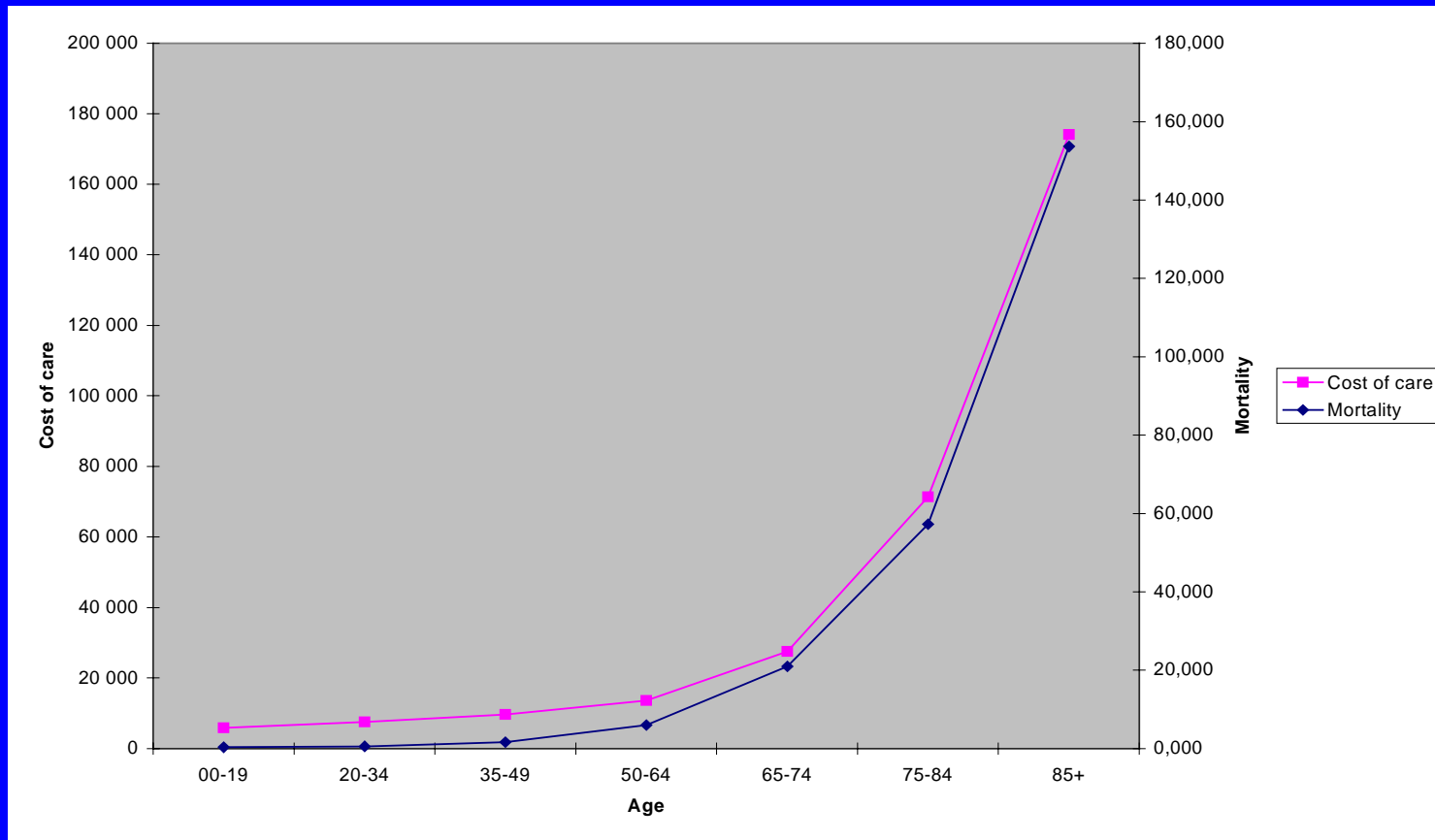
Cost of care and mortality according to age. Sweden 1997

Age-specific health and elderly care costs and age-specific mortality are strongly correlated.

Age	00-19	20-34	35-49	50-64	65-74	75-84	85+
Cost of care (SEK)	5 914	7 529	9 652	13 623	27 581	71 422	174 111
Health care	5 914	7 529	9 652	13 623	20 395	26 732	27 601
Elderly care	0	0	0	0	7 186	44 690	146 510
Mortality rate per 1000	0,356	0,578	1,627	6,012	20,982	57,268	153,670

Source: Ekman M(2002) & Statistical Yearbook of Sweden, 1999.

The age-specific cost of care (SEK) and the age specific mortality (per 1000)



Health care costs and ageing

- Time to death rather than age drives costs
- Costs for nursing home care and social services has a steeper age gradient than health care costs
- Health care and social care a “joint product” at older ages; 25/75 relation?
- Difficult to separate in international comparisons

Limitations of macroeconomic expenditure studies

- They do not directly address issues of efficiency and equity - focus on policies for cost containment
- They ignore the contribution of health care to living standards through improvements in health

Issues for future research

- Do we see new patterns of expenditure during the 1990s?
 - Are the previous results stable?
- Omitted explanatory variables
 - Budget deficits, subsidies to private insurance and introduction of new technology
- Prices versus quantities
- Modelling the interrelation between health care expenditure, health and economic development